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(54) **Preparation of firmly-anchored photocatalytically-active titanium dioxide coating films with non-gelled organic-doped precursors**

(57) The production of thin films of titanium dioxide in the anatase crystallographic structure performing with high photocatalytic activity is made possible on transparent inorganic substrates. The film is produced through deposition (roll, spray, dip coating) of a stable liquid precursor containing an inorganic or metal-organic compound of titanium(IV) partially or totally hydrolyzed in the presence of acid, surfactants and, eventually, s-triazine derivatives. The last improve the photocatalytic activity of the film and its resistance to bases. The gelation of the precursor is blocked by the presence

of acid and/or a suitable surfactant. The absence of gelification avoids the need of further reprecipitation of the gel, as usually required in the common sol-gel methods. The liquid precursor is stable in air, and storable for some months without alteration. Thin films produced in this way show optimal transparency in the visible and induce strong abatement of pollutants under illumination, either in the aqueous or gas phase. Applications range from water purification, waste abatement, air cleaning and deodorization, indoor disinfecting, and self-cleaning transparent glass, goods, fabric, and other architectural or functional elements.

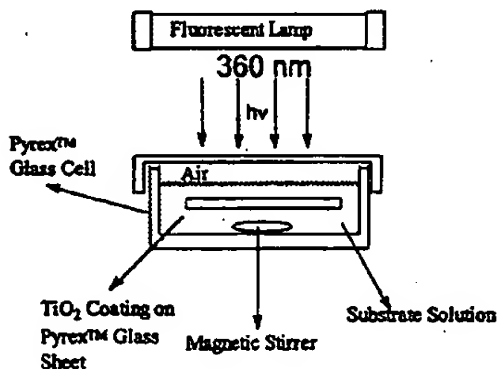


Figure 2.